

CLAIMS

What is claimed is:

- 5 1. A liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator, the liquid crystal projection device comprising:

a ferroelectric liquid crystal (FLC) modulator for receiving an incident light beam transmitting along an incident light path, the incident light beam then being modulated into an image light beam by the FLC modulator, wherein the
10 image light beam is reflected by the FLC modulator along a reflection light path, and wherein the incident light path and the reflection light path are situated at an non-zero angle.
2. The liquid crystal projection device as claimed in claim 1 wherein the
15 incident light path and the reflection light path are situated at an angle of between 20 and 40 degree.
3. A liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator, comprising:
20 a light source for providing light beams;

an optical lens module for receiving and projecting the light beams along an

incident light path; and

a ferroelectric liquid crystal (FLC) modulator disposed on the incident light path for receiving light beams transmitting along the incident light path, the light beams then being modulated into image light beams by the FLC modulator, 5 wherein the image light beams are reflected by the FLC modulator along a reflection light path, and wherein the incident light path and the reflection light path are situated at an non-zero angle.

4. The liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator as claimed in claim 3 further comprising a projection lens disposed on 10 the reflection light path for receiving and projecting the image light beams.

5. The liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator as claimed in claim 4 further comprising a lens disposed between the 15 FLC modulator and the projection lens for receiving the image light beams from the FLC modulator and projecting the received image light beams to the projection lens.

6. The liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator as claimed in claim 3 wherein the optical lens has an optical axis in 20 parallel with the incident light path.

7. The liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator as claimed in claim 3 wherein the optical lens comprises a color plate, a front lens, an integrator unit, a polarity conversion unit, and a rear lens, which are sequentially disposed along an optical axis for receiving the light beams, and
5 the light beams are modulated into light beams with different wavelengths which are uniformed and polarized.

8. The liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator as claimed in claim 7 wherein the color plate has R/G/B regions to
10 form different colors of light.

9. A liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator, comprising:

a light source for providing white light beams;
15 a plurality of ferroelectric liquid crystal (FLC) modulators for modulating light beams into image light beams;

a color separation device for receiving the white light beams and separating the white light beams into a plurality of dichroic light beams according to wavelength, the dichroic light beams incident to the corresponding FLC
20 modulators along incident paths and being reflected to form a plurality of image light beams along reflection light paths, wherein the incident light path and the reflection light path are situated at a non-zero angle;

a light integration device disposed on each of the reflection light path; and
two light-phase adjusting devices installed between the FLC modulator and
the light integration device on two reflection light paths.

5 10. The liquid crystal projection device using a ferroelectric liquid crystal (FLC)
modulator as claimed in claim 9 wherein the incident light path and the
reflection light path are situated at an angle of between 20 and 40 degree.

11. The liquid crystal projection device using a ferroelectric liquid crystal (FLC)
10 modulator as claimed in claim 9 further comprising a plurality of polarizing
device disposed on corresponding incident light paths.

12. The liquid crystal projection device using a ferroelectric liquid crystal (FLC)
modulator as claimed in claim 9 further comprising a plurality of purifying
15 device disposed on corresponding incident light paths for purifying the image
light beams.

13. The liquid crystal projection device using a ferroelectric liquid crystal (FLC)
modulator as claimed in claim 9 further comprising an integrator disposed
20 between the light source and the color separation device for integrating the light
beams from the light source.

14. The liquid crystal projection device using a ferroelectric liquid crystal (FLC) modulator as claimed in claim 9 wherein the color separation device is a intersecting prism.